

**PURCHASE DESCRIPTION
for the
CONTAINER, QUADRUPLE (QUADCON)**

UNITED STATES MARINE CORPS

MARCORSYSCOM-PD-97-0004



**COMBAT
SERVICE
SUPPORT**

**PROGRAM OFFICE
MARINE CORPS SYSTEMS COMMAND
QUANTICO, VA 22134-5001**

7 May 1998

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**PURCHASE DESCRIPTION (PD)
for the
CONTAINER, QUADRUPLE (QUADCON)**

1.0 SCOPE. This Purchase Description (PD) covers the performance criteria and the verification parameters for the quadruple container (QUADCON).

1.1 Purpose. The purpose of this PD is to establish the performance requirements and operational parameters to which the QUADCON must be designed and engineered. Performance, design, and quality assurance requirements, as described in this PD, are required to ensure the form, fit, and function, as well as logistics supportability of the QUADCON production. The QUADCON will provide the Marine Corps with an intermediate size stowage container that is weather tight, prefabricated, dimensionally standard, and reusable. The QUADCON will meet shipping and ground transportation standards as well as prove compatible with the full array of material handling equipment, cranes, and transport helicopters. Each QUADCON shall be certified to meet the requirements of International Convention for Safe Containers, 1972 (CSC).

2.0 APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this PD. This section does not include documents in other sections of this PD or documents recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all requirements documents cited in sections 3, 4, and 5 of this specification, whether listed or not.

2.2 Government documents.

2.2.1 Specifications, Standards, and Handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of Defense Index of Specifications and Standards (DoDISS) and supplements thereto, cited in the solicitation.

REGULATIONS

FEDERAL

Code of Federal Regulations (CFR) 49 -- 450-453 dated
19 Sep 93

SPECIFICATIONS :

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MILITARY (Guidance Only)

None

STANDARDS: (Guidance Only)

MILITARY

MIL-STD-209H Slings and Tiedown Provisions for
Lifting and Tying Down Military
Equipment dated 28 Jun 91

MIL-STD-810E Environmental Test Methods and
Engineering Guidelines dated 31 Jul 95

MIL-STD-1791 Designing for Internal Aerial Delivery
in Fixed Wing Aircraft dated 31 Oct 85
revisions dated 15 Apr 86, 23 Mar 95

FED-STD 595B Colors Used in Government Procurement
Green 34094, Tan 33046

AMERICAN WELDING STANDARD

D 1.1 Structural Welding Code, Steel; 15th
Edition dated 1996

OTHER PUBLICATIONS:

Purchase Descriptions

MARCORSYSCOM-PD-97-005 dated 7 May 1998, Container
Connector, Horizontal (CONNECTOR)

MARCORSYSCOM-PD-97-006 dated 7 May 1998, Quadruple
Container Rack (QUADCON Rack)

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5904. Purchase descriptions cited in this document may be obtained from the Government representative cited in the Statement of Work (SOW).)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are Department of Defense (DoD) adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

INTERNATIONAL CONVENTION:

INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION
CSC Articles International Convention for
Safe Containers (CSC),
London, 1984

CSC, London 1982, Annex I Regulations for the Testing,
Inspection, Approval and
Maintenance of Containers

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CSC, London 1982, Annex II Structural Safety
Requirements and Tests

INTERNATIONAL STANDARDS

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- ISO 668-1995 Series 1 Freight Containers -
Classification, dimensions
and ratings; 5th Edition
- ISO 830-1981 Freight Containers Terminology; 1st
Edition
- ISO 1161-1984 Series 1 Freight Containers - Corner
Fittings - Specification
- ISO 3874-1988 Series 1 Freight Containers
- Handling and Securing; 4th Edition
- ISO 1496/1-1990 Series 1 Freight Containers -
Specifications and Testing - Part 1:
General cargo containers for general
purposes; 5th Edition

*(Application for copies should be addressed to the American National
Standards Institute, 11 West 42nd St., New York, NY 10036-3308.)*

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM E84 - Surface Burning Characteristics of Building
Materials , dated 1995
- ASTM E162 - Surface flammability of materials using a
radiant heat energy source dated 1994
- ASTM E662 - Specific Optical Density of Smoke Generated
by solid materials dated 1995
- ANSI Z1.4 - Sampling Procedures Tables for Inspection by
Attributes dated 1993

*(Address requests for copies to the American Society for Testing and
Materials, 1916 Race Street, Philadelphia, PA 19103.)*

Corrosion Control/Prevention Guidelines

National Association of Corrosion Control
1440 South Creek Drive
Houston, TX 77084
E-mail address - [HTTP:\\www.nace.org](http://www.nace.org)

Painting and Finishing Guidelines for Steel

Steels Structure Painting Council
4400 5th Avenue
Pittsburgh, PA 15213-2683

*(Non-Government standards and other publications are normally available
from the organizations that prepare or distribute the documents. These
documents also may be available in or through libraries or other
informational services.)*

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2.4 Order of precedence. In the event of a conflict between the text of this PD and the references cited herein, the text of this PD shall take precedence. Nothing in this PD shall supersede applicable laws and regulations unless specific exemption has been obtained.

3.0 **REQUIREMENTS**

3.1 General. The QUADCON is an intermediate size intermodel container which conforms to American National Standards Institute (ANSI)/International Standards Organization (ISO) design and performance criteria. The contractor shall design, fabricate, and test the QUADCON with the objective in mind of producing a finished product that meets CFR 49 specifications for freight containers. The federal regulations, in turn, mandate CSC certification for freight containers. Since CSC requirements for testing and ISO standards go hand in hand, those CSC and ISO documents listed in section 2.0 above shall govern the testing and certification process. Terminology, as consistently as possible, in this PD and all written materials associated with the QUADCON is IAW ISO 830-1981.

3.1.1 First Article Test (FAT). When specified in the contract, a sample shall be subjected to FAT /inspection. Specific FAT requirements are found in paragraph 4.3 of this PD.

3.2 Material. The contractor shall select the materials, but the materials shall be capable of meeting all the operational and environmental requirements specified herein.

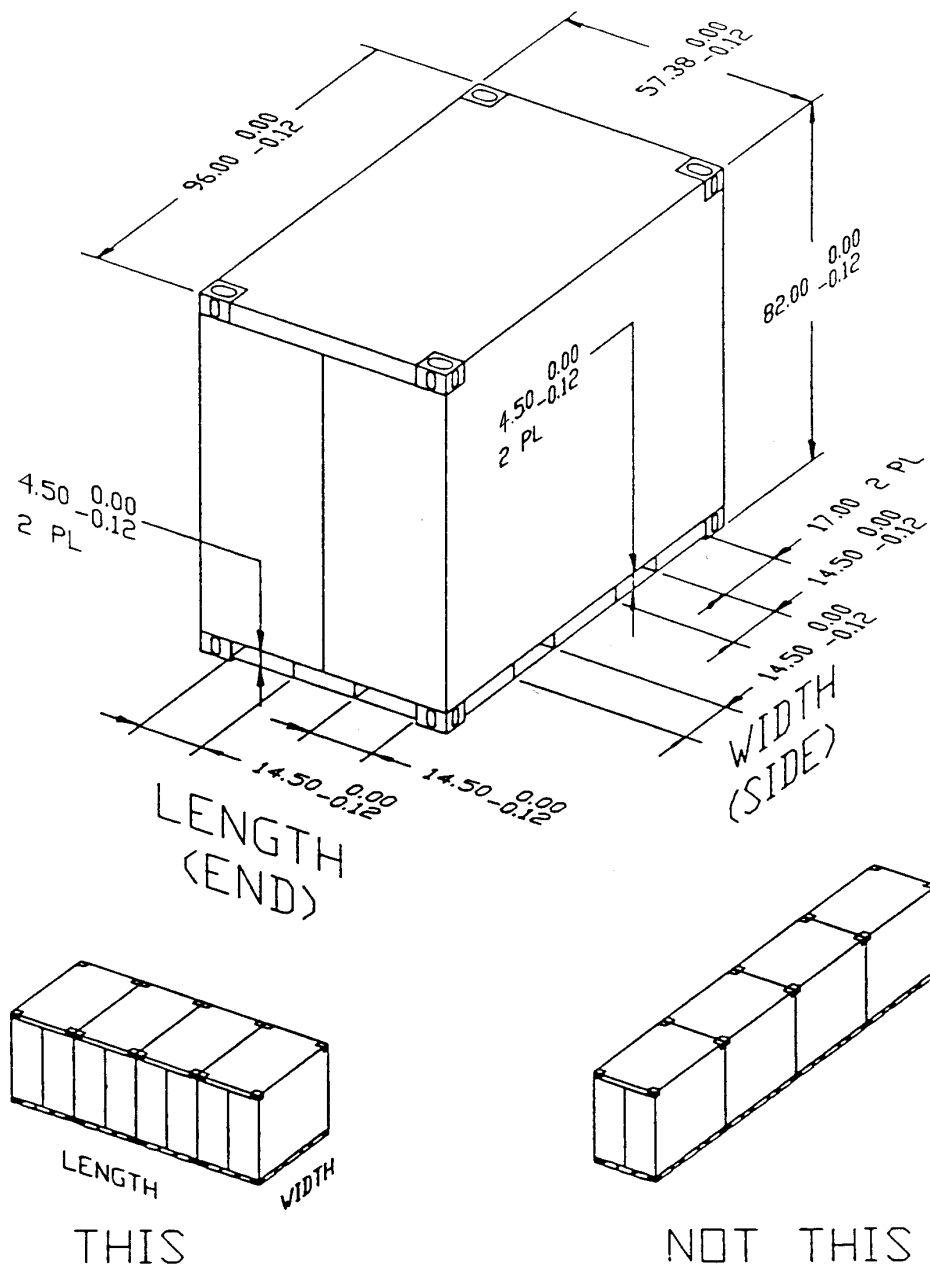
3.3 Design. There is not a pre scribed design nor are there detailed drawings to which the contractor shall conform. The intent of the government is to describe in this PD the performance parameters that the QUADCON must achieve. The design combined with the materials shall be capable of meeting all the performance, environmental, and reliability requirements specified herein to include applicable CFR 49 certifications. While drawings are included in this PD (see Figure 1), they are not intended to dictate exact specifications per se. The drawings serve to illustrate gross length, width, and height dimensions which comply with ISO configured material handling systems. The dimensional aspects of the QUADCON are dictated by the performance requirement that the QUADCON be interoperable and compatible with all other ISO configured material handling, transportation, and container equipment as well as existing container racks/inserts unique to containers used by the U.S. Marine Corps.

3.4 Performance characteristics.

3.4.1 Mission capability. The QUADCON will provide the Fleet Marine Force (FMF) an intermediate sized container to store and transport small organic equipment and consumable supplies (organizational clothing, individual equipment, administrative supplies, and repair parts) during deployment and while employed.

3.5 Physical Characteristics

Figure 1; Dimensions and Configuration



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3.5.1 Weight. The distinctions between each of the following shall be observed: Tare weight, maximum gross weight, gross weight rating, and maximum gross weight rating.

3.5.1.1 Gross Weight Rating. The following gross weight ratings are used to determine the allowable stacking weight and the racking test load that shall be listed on the international CSC safety approval plate as shown in the appendix to CSC, London 1982, Annex I. The gross weight ratings of QUADCON unit loads shall be:

| <u>Unit Load</u> | <u>ISO Designation</u> | <u>Gross Weight Rating (lbs)</u> |
|------------------|------------------------|----------------------------------|
| Single | -- | 11,200 |
| Pair | 1DX | 22,400 |
| Quad | 1CX | 44,800 |

These ratings are the maximum gross weight ratings permitted by ISO as shown in Table 2 of ISO 668-1988.

3.5.1.2 Maximum Gross Weights. These values pertain to the QUADCON unit load (which is the maximum payload); plus the QUADCON tare weight (which is the weight of an empty QUADCON container); plus the weight of Container Connectors, Horizontal (CONNECTOR). The maximum gross weights, chosen by the Marine Corps, are less than the gross weight ratings as permitted by the ISO. The maximum gross weight for the QUADCON includes the weight of the CONNECTORS and is rounded to the nearest 100 lbs. The maximum gross weights of QUADCON unit loads shall be:

| <u>Unit load</u> | <u>Designation</u> | <u>Maximum Gross Weight</u> |
|------------------|--------------------|-----------------------------|
| Single | -- | 10,000 |
| Pair | 1DX | 20,100 |
| Quad | 1CX | 40,200 |

(Note: The letter R is used to represent the external load (maximum gross weight rating) in some sections of the CSC and ISO documents and the internal load (maximum gross weight) in other sections.

3.5.1.3 Tare Weight. The QUADCON shall have a maximum tare weight of 1800 pounds and 1600 pounds desired, including all permanent hardware.

3.5.2 Dimensions. The overall outside Length, Width, and Height of a single QUADCON shall be such that when four are connected to form a single transportable unit, as shown in Figure 1, they shall comply with ISO standards for a container 20 feet in length and 8 feet wide. The width and length must not be confused, because they determine the definitions of end and side loads, and the direction of travel when mounted on a vehicle, as shown in Figure 1 of this PD.

3.5.2.1 CSC Certification Waiver. A waiver to CSC Certification for vertical deflection will be provided for the 1CX configuration up to;

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1 1/8" when loaded to 1 R, 1 5/16 when loaded to 1.8 R and 1 9/16 when loaded to 2 R.

3.5.2.2 Dimensions of Tineways . The dimensions of the forklift tineway openings shall be 4 .5 inches plus 0 inches minus .12 inches high by 14.5 inches plus 0 inches minus .12 inches wide. There shall be one set in the end and one set in the side of the QUADCON as shown in Figure 1, and they shall meet the strength requirements of ISO 1496/1-1984. The underside of the tineways shall be constructed to accommodate a pallet truck with 60 inch tines.

3.5.3 QUADCON configuration . QUADCONs shall have the capability to connect as intermodal shipping containers when configured as singles, pairs, and quads. The manufacturer shall achieve CSC certification for the following configurations.

3.5.3.1 SINGLE QUADCON . The basic QUADCON shall be designed to meet the same load factors that are used for ISO air containers for fixed wing and rotary wing air modes of transportation. As such the QUADCON shall meet the requirements similar to MIL-STD-209H and MIL-STD-1791. *The dimensional and restraint provisions of the air modes, however, shall not apply.*

3.5.3.2 Pair of QUADCONs . The pair of QUADCONs shall be certified in the marine, highway, and rail modes of transportation IAW the CSC documents and ISO standards. The pair of QUADCONs shall be connected side to side, as shown in Figure 1.

3.5.3.3 Quad of QUADCONs . The quad of QUADCONs shall be certified in the marine, highway, and rail modes of transportation IAW the CSC documents and ISO standards. The quad of QUADCONs shall be connected side to side, as shown in Figure 1.

3.6 Service Life

3.6.1 Unused Service Life . The QUADCON shall have an indefinite unused shelf life.

3.6.2 In-Use Service Life . The in-use service life of the QUADCON is 15 years.

3.7 Reliability . The components of the QUADCON shall serve their intended purpose with ease. Moving parts shall demonstrate durability by consistently functioning smoothly during normal, i.e., repetitive, usage. Normal usage on an annual basis is daily use in garrison and two 30-day deployments per year to tactical field environments or aboard amphibious or commercial ships. Not more than one superficial malfunction should occur per one hundred repetitive operations, per each operational mode, per each QUADCON at maximum gross weight. A superficial malfunction is any malfunction which can be readily corrected through adjustment, straightening, or relift. Failure of any part that creates a hazard, renders the QUADCON unsafe, or requires deliberate repair/replacement at intermediate

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maintenance to make the container serviceable is not a superficial malfunction.

3.8 Maintainability .

3.8.1 Organizational maintenance . The QUADCON shall be designed so that 100% of preventive maintenance can be performed in the field. Preventive maintenance at the organizational level shall not be more extensive than cleaning, lubricating moving parts, tightening of fasteners, and applying any preservatives that may be required. Any corrective maintenance at the organizational level for the QUADCON shall be accomplished by use of common tools currently in the Marine Corps inventory. Such organizational corrective maintenance might include the removal, repair or replacement of hinges, moving parts and fixed parts or components. The maximum time to repair at organizational level maintenance shall not exceed three hours. Mean time to repair at the organizational level shall not exceed .5 hour.

3.8.2 Intermediate maintenance . The QUADCON shall be repairable at the intermediate level by tools currently in the Marine Corps inventory. Maintenance at the intermediate level will include such actions as straightening bent structural members, repairing/replacing wall panels, repairing bent or sprung doors, etc. The maximum time to repair at intermediate maintenance shall not exceed 6 hours. Mean time to repair at the intermediate level shall not exceed 1 hour.

3.9 Environmental conditions

3.9.1 Waterproofness . The QUADCON shall withstand testing requirements of this PD without leakage at any location.

3.9.2 Temperature-humidity . The QUADCON shall be capable of functioning when exposed to temperatures of -65 °F to 125 °F at any possible relative humidity from 0 to 100 percent. In storage, the QUADCON shall be capable of withstanding exposure to temperatures of -70°F to 160 °F at any possible relative humidity from 0 to 100 percent without cracking, corroding, delamination, or paint peeling from exterior or interior surfaces .

3.9.3 Temperature shock . The QUADCON shall be capable of withstanding sudden temperature changes up to and including from 160 °F to -70°F and back to 160 °F without degradation of physical properties.

3.9.4 Ice. The QUADCON design shall not permit water accumulation in pockets, creases, fissures, etc ., that could cause structural damage upon freezing. The operation of movable QUADCON components shall not be unduly impaired by the formation of ice anywhere on the QUADCON structure.

3.9.5 Wind. The QUADCON in all configurations at Tare weight shall be capable of withstanding wind speeds of up to 65 mph and gusts of up to 120 mph lasting two minutes.

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3.9.6 Roof load . The QUADCON shall withstand a uniform load of 40 pounds per square foot over the entire roof of the QUADCON without permanent damage and a concentrated load of 660 pounds static over an area 24 inches by 12 inches at the weakest area of the rigid roof without permanent damage rendering the QUADCON unusable.

3.9.7 Sand and dust . The QUADCON shall withstand the effects of sand and dust on all external moving parts without degradation or infiltration of particles inside the unit.

3.9.8 Ultraviolet radiation . The QUADCON shall withstand the effects of ultraviolet radiation from the sun without degradation or effect on serviceability of QUADCON components or materials during the service life.

3.9.9 Solar load . The QUADCON shall withstand a solar heat load in its roof sufficient to raise the outer skin to at least 160 °F without any evidence of delamination or permanent deformation.

3.9.10 Salt fog . The QUADCON shall be fully serviceable when exposed to sea-salt fallout equivalent to 25 pounds/acre/year. All fasteners, seals, or other hardware shall show no evidence of corrosion or degradation affecting serviceability.

3.10 Interoperability

3.10.1 QUADCONs & Internal Components . There shall be complete and total compatibility/interoperability between QUADCONs and any internal appointments; e.g., shelves, bins, racks, inserts etc. The QUADCON shall be interoperable with existing Marine Corps QUADCON Racks (KECO Model #138K0060 and QUADCON RACKS manufactured IAW purchase description Quadruple Container Rack (QUADCON Rack), MARCORSYSCOM-PD-97-006, dated May 7, 1998. The QUADCON shall be transportable when fitted with QUADCON racks and the Full Length Size Insert (manufactured by Plastics Research Corporation Part # 102438) and the Half Length Size Insert (manufactured by Plastics Research Corporation Part # 102439).

3.10.2 Material Handling Equipment (MHE) . QUADCONs shall be compatible with all existing MHE equipment in the Marine Corps inventory. The forklift tineways shall allow forklift pickup from approaches to the container end and from the side.

3.10.3 Transport Equipment . QUADCONs shall be compatible with existing transport equipment having a payload capacity of 5 tons or greater.

3.10.4 Cold Weather Clothing . The QUADCON shall be fully operable by Marines when wearing the full array of cold weather clothing currently in the Marine Corps' inventory.

3.10.5 Nuclear Biological and Chemical (NBC) Clothing . The QUADCON shall be fully operable by Marines when wearing the full array of NBC clothing currently in the Marine Corps' inventory.

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3.11 Transportability . The QUADCON shall be transportable at all modes of transport at their maximum gross weight and/or when fitted with the QUADCON racks and inserts.

3.11.1 U.S. Highway transport . Containers and prime mover combinations must meet U.S. highway legal limits.

3.11.2 Intermodal transportation . The QUADCON shall withstand the requirements of the CSC intermodal transportation requirements for land, sea, and air transport as 1CX shipping containers when four QUADCONS are coupled together with a gross weight of 40,200 pounds except as required in paragraph 3.12.1.

3.11.3 Railroad transportability . The QUADCON shall withstand without damage the shocks normally induced by rail transport.

3.11.4 Air Transportability . The QUADCON shall be transportable by Marine Corps heavy lift rotary wing aircraft and in Air Force prime mission aircraft. The QUADCON shall be capable of withstanding rapid decompression similiar to the requirements of MIL-STD-1791 when transported aboard cargo aircraft. The QUADCON shall be so configured for air shipment as to prevent any part from becoming a projectile in the event of catastrophic loss of aircraft cabin pressure.

3.11.4.1 External Airlift Transport by Helicopter . The QUADCON shall prove capable of external transport when rigged for sling lift by heavy lift rotary wing aircraft. External transport shall encompass single QUADCONS at maximum gross weight as well as a pair of QUADCONS at maximum gross weight.

3.11.5 Seabased shipping . The QUADCON shall be marine transportable on shipping vessels/ships the size of the LCM-8 or larger .

3.12 Design and construction

3.12.1 Understructure . The understructure shall be of sufficient strength to provide uniform floor support on all loading conditions when supported solely by the upper and lower corner fittings and when being lifted/transported utilizing the forklift pockets. The underside shall be designed so that n o part of the base shall deflect more than 1.3125 inches below the bottom faces of the lower corner fittings when supported by the corner fittings and loaded to 1.8 R.

3.12.2 Doors . Double doors shall be provided on each 57.38-inch end. These doors shall be interchangeable with like doors on all QUADCONS purchased through this PD. They shall open and close without binding and when in their fully opened position allow the INSERTs to freely move in and out of the QUADCON racks.

3.12.3 Corner Fittings . Top corner fittings shall be the same as the bottom corner fittings as specified in ISO 1161-1984 to allow a more secure fitment of the innerconnectors in the end apertures.

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3.12.4 Tolerances for QUADCON perpendicular angles . In all instances when a fixed wall, floor, or roof panel intersects with any adjacent fixed wall, floor or roof panel the angle formed shall be perpendicular within 1/8 inch (0.125 inches). The "squareness" of the angle shall be determined with a 36-inch square whose two edges are perpendicular to each other within .005 inches. 90°

3.12.5 Materials, processes, and parts . Materials and processes listed below are for general information only and do not dictate nor suggest the type of material to be used, neither do they demonstrate fabrication methods .

3.12.5.1 Metal fabrication . Metal used in the fabrication of equipment shall be free from kinks and sharp bends. The straightening of material shall be done by methods that will not cause damage to the metal. Shearing and punching shall be done neatly and accurately. Corners shall be square and true. All bends shall be made with controlled means in order to ensure uniformity of size and shape.

3.12.5.2 Bolted and riveted connectors . Bolt and rivet holes shall be accurately punched or drilled and have the burrs removed. Washers, lockwashers, or locknuts shall be provided where necessary and all bolts, nuts, and screws shall be tight. Rivet heads, when not countersunk or flattened, shall be of uniform size and shape for the same diameter rivet, concentric with the rivet holes, and in full contact with the surface of the members.

3.12.5.3 Welding . Welding will be in accordance with commercially acceptable welding and corrosion control standards.

3.12.5.4 Castings . Casting shall be sound and free from patching, misplaced coring, warping, or defects that might render the casting unsound for use.

3.12.5.5 Seals . Seals shall be installed so that the fit is snug, and continuous contact is maintained with mating seal faces. Mitered end junctions of vertical and horizontal seal runs shall be accurate, and gaps shall be sealed.

3.12.5.6 Finish . All surfaces to be painted shall be cleaned and treated IAW guidelines prescribed by the coating manufacturer and the Steel Structure Painting Council. All surfaces or ferrous components shall be coated with a primer coat and topcoat. Primer and paint shall be chosen to meet the requirements of this PD (especially paragraph 3.9.8, 3.9.9, 3.9.10 and 3.12.5.7) and the required shelf and service life. The color shall be Green 34094 or Tan 33446, IAW FED-STD-595B, as specified in each delivery order. Contractor may submit alternative method for determining color to the Government for approval.

3.12.5.7 Corrosion . All QUADCON components shall be designed and constructed to withstand; a severe amphibious environment, routine submission to high velocity salt spray, and long term storage in a

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salt air environment. Corrosion prevention guidelines are established by the National Association of Corrosion Engineers (NACE). Design elements shall consider areas such as material selection, channels, joints to include welds, etc., to ensure that design criteria conform to NACE guidelines. Selection of processes, materials and finishes shall ensure corrosion resistance for the service life of the QUADCON.

3.13 Identification and certification marking

3.13.1 Identification/ Markings. Each QUADCON shall have the following information provided on a serial plate permanently affixed to the QUADCON.

Manufacturer:

Model:

Type:

Serial No: (As assigned by the Contracting Activity)

Tare Weight:

NSN:

3.13.1.1 Bar Code. QUADCONs shall also be encoded (bar coded) at the bottom of each serial plate IAW Two-Dimensional (PDF-417) label format. Data fields will include NSN, Serial Number, date of manufacturer and additional data to be provided.

3.13.2 Certification. Markings shall be IAW coding, marking, and CSC plating requirements. Each QUADCON shall be certified and shall carry the appropriate certification (CSC safety approval plate) from the approval authority as to its capability to act as a shipping container. Certification shall be IAW the requirements of 49 CFR 450-453.

3.14 Workmanship. All parts, components, and assemblies of the QUADCON, including castings, forgings, molded parts, stampings, seals and sealing agents, machined surfaces, and welded parts, shall be clean and free from any defects that will prohibit the QUADCON from meeting the requirements specified herein. Any components and assemblies which have been repaired or modified to overcome deficiencies or deficient components or assemblies which are determined to be used "as is" shall not be used unless authorized by the contracting activity. External surfaces shall be free from burrs, slag, sharp edges and corners, except where sharp edges and corners are required. The supplier is responsible for fabrication techniques that will prevent the occurrence of unacceptable dimensions and tolerances.

3.15 Interchangeability. Demountable hardware and components of the QUADCON shall be interchangeable with any and all other QUADCONs manufactured under this PD.

3.16 Safety. The QUADCON and the QUADCON components shall be designed and constructed in such a manner so as not to pose a safety hazard to personnel.

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3.16.1 Fire retardancy . Each QUADCON shall be fire ret ardent to a class A rating IAW ASTM E 84.

3.17 Drop shock . The QUADCON shall be capable of withstanding flat and rotational drops of 12 inches onto concrete.

4.0 VERIFICATION. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all test requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the quality assurance requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the tests set forth in this PD where such tests are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1 Classification of Tests/Inspections . The inspection requirements specified herein are classified as follows:

- a. CSC/ISO approval certification tests (see Section 4.2)
- b. First Article Test (see Section 4.3)
- c. Quality conformance inspection (see Section 4.4)

4.1.1 Conditions and exceptions . These tests shall be witnessed by a Government representative. The CONNECTOR shall be included only as part of the test apparatus. If any FAT or ISO test requirement is satisfied by one of the CSC tests in paragraph 4. 2, the test need not be repeated; in that case, the CSC test shall be sufficient.

4.2 CSC/ISO Authority Cer tification Process . The CSC approval certification is conducted in three separate phases. The certification process shall include all the reviews and tests required to acquire CSC approval certification of the QUADCON and QUADCON arrays IAW 49 CFR 450-453. The tests are specified and observed by a representative of a CSC approval authority.

4.2.1 Phase I - Container Drawings Evaluation . The first phase of a CSC certification process for freight containers requires the container manufacturer to submit product drawings to the CSC approval authority for their evaluation. When the drawings meet the requirements of the CSC approval authority the certification process advances to phase II.

4.2.2 Phase II - Prototype Test and Evaluation . The second phase of the CSC certification process is to validate the design, by testing the prototype containers. The QUADCON certification tests, which require arrays of QUADCONs, shall be conducted as directed by the CSC approval authority. The contractor will submit the number of prototype containers required by the CSC certifying authority for tests conducted in the order specified by the approval authority.

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Information is available in the CSC Articles; CSC, London 1982, Annex I; and CSC, London 1982, Annex II.

4.2.2.1 Manufacturers preparation for CSC testing . In preparation for the CSC prototype testing phase, the contractor shall perform connector tests, corner fitting tests, and QUADCON squareness tests. The Connector shall be included only as part of the test apparatus.

a. CONNECTOR tests . The CONNECTOR chosen by the contractor shall be tested to show that it meets purchase description Container Connector, Horizontal (CONNECTOR).

b. Corner fitting tests . The corner fittings chosen by the contractor shall be checked for dimensional conformance with ISO 1161-1984 except as modified by paragraph 3.12.3. A simple check will be made to show that the CONNECTOR and the corner fittings are compatible. The CONNECTOR must function in the end hole of the top corner fittings and in the end hole of the bottom corner fittings, left and right hand.

c. QUADCON squareness tests . Measurements shall be taken at the top, middle, and bottom of each of the four vertical corners. For intersecting QUADCON wall, floor, and roof panels containing mounting members, measurements shall be taken at the mounting members or at 24-inch intervals. Four or more gaps in the lot of measurements taken, in excess of 1/8-inch, shall be cause for rejection of the unit.

4.2.2.2 CSC/ISO testing parameters . The QUADCON shall meet the requirements in ISO 1496/1-1984 as a 1CX container and as a 1DX container with the exception provided in paragraph 3.5.2.1.

a. Container type . The QUADCON is a totally enclosed general purpose container as defined in Section 1 of ISO 1496/1-1984.

b. Ratings . The rating, R, in Section 3.4 of ISO 1496/1-1984, shall be the same as given in ISO 668-1988(E) as specified in paragraph 3.2.2.1(d) herein. This R is the "external" R as defined in paragraph 3.2.2.1(d) herein.

c. Loads . All test loads shall be expressed as forces in pounds, converted from kilonewtons where necessary; therefore, there will be no distinction between R and Rg, P and Pg, or T and Tg as in Section 5.1.1 of ISO 1496/1-1984. This R is the "internal" R, not the "external" R, as defined in paragraph 3.2.2.1(d) herein.

4.2.2.3 Applicable ISO tests . The applicable tests in Section 5 of ISO 1496/1-1984 shall be as shown in Table I below.

| Table I, CSC/ISO TESTS (Section 5 of ISO 1496/1-1984) | |
|---|--|
| ISO Test | Explanatory Notes for Application to the QUADCON |

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| Table I, CSC/ISO TESTS (Section 5 of ISO 1496/1-1984 | |
|---|--|
| ISO Test | Explanatory Notes for Application to the QUADCON |
| Stacking (Test #1) | Stacking shall apply only to the quad of QUADCONS, which is the 1CX size. The internal test force of 1.8 R shall be 95,200 pounds, because R in this case is the maximum gross weight specified in paragraph 3.5.1.2. The external test forces of 2.25 R shall be 119,025 pounds, because R in this case is the gross weight rating specified in paragraph 3.5.1.1. |
| Lifting from the four top corner fittings (Test #2) | This test has two different conditions of loading and restraining as shown in Figures 3 and 3A in Annex A of ISO 1496/1-1984. Lifting straight up by means of a lifting frame as diagrammed in Figure 3 shall apply only to the quad. Lifting by means of a sling with a sling angle of 60 degrees as diagrammed in Figure 3A shall apply to the quad (1CX), the pair (1DX), and the single. The internal test force of 2 R shall be 80,400 pounds for the quad, 40,200 pounds for the pair, and 20,000 pounds for the single. |
| Lifting from the four bottom corner fittings (Test #3) | This test applies to the quad and the single configuration. the sling angle for the single, not included in the standard, shall be 60 degrees to the horizontal. Values of 2 R shall be the same as the test for lifting from the four top corner fittings. |
| Restraint (Longitudinal) (Test #4) | This test shall apply only to the quad (1CX). The value of R is the same as in paragraph 3.5.1.1. The value of 2 R shall be the same as in Test No. 2 and Test No. 3. |
| Strength of end walls (Test #5) | This test shall apply only to the single QUADCON. Only one end wall need be tested because construction is symmetrical. |
| Strength of side walls (Test #6) | This test shall apply only to the single QUADCON. Only one end wall need be tested because construction is symmetrical. |
| Strength of the roof (Test #7) | This test shall apply only to the single QUADCON. |
| Rigidity (Transverse) (Test #9) | This test shall apply to the quad (1CX). Only one end need be tested because the ends are identical. |
| Rigidity (Longitudinal) (Test #10) | This test shall apply to the quad (1CX). Only one side need be tested because the sides are identical. |
| Lifting from forklift pockets (Test #11) | This test shall apply only to the single. The test load shall be 1.25 R, where R is the gross weight rating in paragraph 3.5.1.1. The side pockets and the end pockets shall be tested, separately, both at a load of 1.25 R. |
| Weatherproofness (Test #13) | This test shall apply only to the single QUADCON. |

4.2.3 Phase III of the CSC/ISO certification process . The third phase of the CSC certification process is examination and approval of the manufacturers quality assurance program by the CSC certifying authority. The manufacturer will submit to the CSC authority the quality assurance plan by which the manufacturer will ensure consistent adherence to approved production methods.

4.3 First Article Test . The contractor shall conduct the tests specified in this section on the FAT specimens. The first article specimens shall be manufactured using the same procedures and tooling

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proposed for production of containers intended for delivery to the Government. Approval of the first articles by the Government shall not relieve the contractor of the obligation to supply equipment conforming to this PD for the duration of the contract. None of the tests shall commence until after Government approval of the contractor's test plan and completion of fabrication of all test specimens. The contractor shall furnish at least 12 horizontal container connectors that are required to test an array of QUADCONs. The contractor shall be responsible for the adequacy of the connectors he chooses to meet the requirements of purchase description Container Connector, Horizontal (CONNECTOR).

4.3.1 General. The specific performance characteristics requiring verification and validation during FAT are listed in Table II; First Article Test Matrix. In addition to any contractor tests and inspections, the Government reserves the right to perform inspections in accordance with DFARS 252.211-7004 Inspection and Acceptance - Commercial Items, to insure that the product submitted for delivery meets all requirements of this PD.

| Table II; First Article Test Matrix | | | | | |
|--|-------------|----------------|-----------------------------|----------------------------------|-------------------|
| Performance Characteristic | Reqt. Para. | Test Method | # of Determinate's per Unit | Results Reported as Pass or Fail | # of Sample Units |
| Conformation to ANSI/ISO standards and meets CFR 49 certification requirements | 3.1 | Section 4.2 | N/A | Yes | TBD |
| Mission Capability | 3.4.1 | See Note #1 | N/A | Yes | N/A |
| Weight | 3.5.1.3 | 4.3.8 | 1 | Yes | 1 |
| Maximum Gross Weight | 3.5.1.2 | Section 4.2 | N/A | Yes | TBD |
| Dimensions | 3.5.2 | 4.3.9 | 1 | Yes | 1 |
| QUADCON Configuration | 3.5.3 | See Note #2 | 4 | Yes | |
| Unused Service Life | 3.6.1 | See Note #3 | N/A | Yes | |
| In-Use Service Life | 3.6.2 | See Note #4 | N/A | Yes | |
| Reliability | 3.7 | See Note #5 | N/A | Yes | |
| Maintainability (Organizational Maintenance) | 3.8.1 | See Note #7 | N/A | Yes | |
| Maintainability (Intermediate Maintenance) | 3.8.2 | See Note #6 | N/A | Yes | |
| Waterproofness | 3.9.1 | 4.3.6.1 | 1 | Yes | 1 |
| Temperature-Humidity | 3.9.2 | 4.3.6.2 | 1 | Yes | 1 |
| Temperature shock | 3.9.3 | 4.3.6.4 | 1 | Yes | 1 |
| Ice | 3.9.4 | 4.3.6.3a | 1 | Yes | 1 |
| Wind | 3.9.5 | 4.3.6.9 | 1 | Yes | 1 |
| Roof Load | 3.9.6 | 4.2 Test #7 | 1 | Yes | 1 |
| Sand and Dust | 3.9.7 | 4.3.6.5 | 1 | Yes | 1 |
| Ultraviolet radiation | 3.9.8 | 4.3.6.6 | 1 | Yes | 1 |
| Solar load | 3.9.9 | 4.3.6.7 | 1 | Yes | 1 |
| Salt fog | 3.9.10 | 4.3.6.8 | 1 | Yes | 1 |

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| Table II; First Article Test Matrix | | | | | |
|--|----------------|----------------|-----------------------------|----------------------------------|-------------------|
| Performance Characteristic | Reqt. Para. | Test Method | # of Determinate's per Unit | Results Reported as Pass or Fail | # of Sample Units |
| Interoperability btwn QUADCONs | 3.10.1 | 4.2 (CSC Cert) | 1 | Yes | 4 |
| Interoperability with MHE | 3.10.2 | 4.3.5.4 | 1 | Yes | 4 |
| Interoperability with Transport Equipment | 3.10.3 | 4.3.5.5 | 1 | Yes | 4 |
| Interoperability with Cold Weather Clothing | 3.10.4 | 4.3.10.3 | 1 | Yes | 1 |
| Interoperability with NBC Clothing | 3.10.5 | 4.3.10.2 | 1 | Yes | 1 |
| Interoperability with Racks | 3.10.1 | 4.3.10.1 | 1 | Yes | 1 |
| Transportability - U.S. highways | 3.11.1 | 4.3.5.5 | 1 | Yes | 4 |
| Transportability - Intermodal | 3.11.2 | 4.2 | 1 | Yes | 4 |
| Transportability - Railroad | 3.11.3 | 4.3.5.1 | 1 | Yes | 4 |
| Transportability - Air | 3.11.4 | 4.3.5.2 | 1 | Yes | 1 |
| Transportability - External Helicopter Lift | 3.11.4.1 | 4.3.5.3 | 1 | Yes | 1 |
| Transportability - Seabased shipping | 3.11.5 | 4.2 | 1 | Yes | 4 |
| Understructure | 3.12.1 | 4.2 | 1 | Yes | 1 |
| Doors | 3.12.2 | See Note #6 | 1 | Yes | 1 |
| Corner Fittings | 3.12.3 | 4.2.2.1b | 1 | Yes | 1 |
| Tolerances for perpendicular angles | 3.12.4 | 4.2.2.1c | 1 | Yes | 1 |
| Identification and Markings | 3.13.1; 3.13.2 | 4.3.13 | 1 | Yes | 1 |
| Workmanship | 3.14 | 4.3.12 | 1 | Yes | 1 |
| Interchangeability | 3.15 | 4.3.10.4 | 1 | Yes | 1 |
| Safety | 3.16 | 4.3.11 | 1 | Yes | 1 |
| Fire retardancy | 3.16.1 | 4.3.11 | 1 | Yes | 1 |
| Drop shock | 3.17 | 4.3.2; 3; 4 | 3 | Yes | 1 |
| Note #1 Mission Capability is a function of the QUADCONs ability to meet all the requirements of this PD. Therefore validation of the mission capability requirement shall be determined by pass or failure of first CSC certification and then FAT. | | | | | |
| Note #2 -- QUADCON configuration, i.e., the ability of the QUADCONs to connect and form ISO freight containers, shall be validated through the CSC certification process. | | | | | |
| Note #3 -- Validation of an unlimited unused service life shall be verified by the Government through a review of certifications for materials used in construction of the containers, review of the methods for production, and the performance of the containers when tested for their ability to withstand environmental stresses, i.e., solar load, temperature extremes, wind resistance, etc.. | | | | | |

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| Table II; First Article Test Matrix | | | | | |
|---|-------------|-------------|-----------------------------|----------------------------------|-------------------|
| Performance Characteristic | Reqt. Para. | Test Method | # of Determinate's per Unit | Results Reported as Pass or Fail | # of Sample Units |
| Note #4 -- Validation of a 15 year service life shall be verified by the Government through a review of certifications for materials used in construction of the containers, review of the methods for production, and the overall durability of the containers during testing for all requirements. | | | | | |
| Note #5 -- Reliability will require evaluation of the drawings, material certifications, production methods, and the results of all test events during FAT. If during any of the test events the QUADCON requires corrective maintenance and upon investigation it is determined that the part or component failed because of poor design, or production procedures the QUADCON shall be determined as failing reliability. | | | | | |
| Note #6 -- While a formal level of repair analysis will not be done, the Government will conduct an analysis of parts and productions procedures to verify that maintenance (Organizational and Intermediate) does not require skills, tools, or equipment presently not existing in the Marine Corps. | | | | | |
| Note #7 -- Durability and functionality of the doors will be evaluated during all testing for FAT. Government observers will determine if the doors design is adequate. | | | | | |

4.3.2 Drop shock tests . The single QUADCON will first be tested with its maximum payload uniformly distributed over the entire usable floor space of the container in the shipping configuration. It will next be tested with Racks and INSERTs installed and INSERTs loaded to their maximum gross weight. All the components shall be subjected to a drop test similiar to MIL-STD-810E, Method 516.4, Procedure IV, except that the height of the drop shall be limited to 12 inches. There shall be no permanent deformation, buckling, delamination, sealer separation, or structural failures of any part of the QUADCON, and the doors and covers shall open and close without binding.

4.3.3 Flat drop test . The test unit, loaded with its payloads as specified above, shall be lifted 12 inches from the ground and allowed to free fall with the bottom impacting on to a concrete surface. Only one drop shall be performed. There shall be no permanent deformation, buckling, delamination, sealer separation, or structural failures of any part of the QUADCON, and the doors and covers shall open and close without binding.

4.3.4 Rotational drop test . The test unit, loaded with its payloads as specified above, shall be placed with one edge of the QUADCON on a nominal four-inch high block and the opposite edge of the QUADCON raised 12 inches and then allowed to fall freely onto a concrete surface using the four-inch block as a pivot. This test shall be performed once on each of the four bottom edges of the QUADCON. There shall be no permanent deformation, buckling, delamination, sealer separation, or structural failures of any part of the QUADCON, and the doors and covers shall open and close without binding.

4.3.5 Transportability tests .

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4.3.5.1 Railroad transportability . The quad of QUADCONs shall first be uniformly loaded to the gross weight rating of 44,800 pounds and subjected to test similiar to MIL-STD-810E, Method 516.4, Procedure VIII. It will next be subjected to the same tests with the QUADCON Racks and INSERTs installed, and INSERTs loaded to their maximum gross weight. Any failure of the QUADCON to withstand the stresses induced during the railroad transportability test shall constitute failure of this test event.

4.3.5.2 Air mode tests . Air mode tests shall be designed and conducted to show the structural adequacy of the QUADCON. These tests shall first be conducted with the maximum payload uniformly distributed over the entire usable floor space of a single QUADCON in the shipping configuration, and next with Racks and INSERTs installed and INSERTs loaded to their maximum gross weight. The scope of these tests shall include internal fixed wing and external rotary wing air modes of transportation. The QUADCON shall be subjected tests similiar to MIL-STD-1791, paragraph 5.2.5, Rapid Decompression verification. Any failure of the QUADCON to withstand the stresses induced during the air mode test shall constitute failure of this test event.

4.3.5.3 Slinging and tiedown provisions . Slinging and tiedown provisions for all modes of transportation shall meet the requirements similiar to MIL-STD-209H. A failure of the QUADCON to meet the measurements needed for successful completion of slinging and tiedown testing shall constitute failure of this test event.

4.3.5.4 Forklift Test . Should any dimensions and tolerances result in a 60-inch component or assembly not accommodating the tineways, the QUADCON shall be judged as not meeting the requirements of this PD and failure of the FAT .

4.3.5.5 Highway Transport . Validation of the QUADCON to fit on motor transport vehicles in the Marine Corps inventory can be accomplished by verifying the dimensions, weight, and adherence to ISO criteria for freight containers. Successful attainment of CSC certification by the QUADCON shall constitute adequate verification for highway transport.

4.3.6 Environmental tests

4.3.6.1 Waterproofness . To be conducted IAW CSC/ISO tests (Section 5 of ISO 1496/1-1984 test number 13). Failure of the QUADCON to meet this test shall constitute failure of this test event.

4.3.6.2 Humidity resistance . The QUADCON shall be subjected to test similiar to MIL-STD-810E, Method 507.3, Procedure II. After cycling, the QUADCON shall be examined and show no evidence of delamination, cracking, corrosion, or deterioration of any part of the QUADCON. Evidence to the contrary shall constitute failure of this test event.

4.3.6.3 Cold Weather Environmental Affects . The QUADCON shall be cold soaked in a mechanically refrigerated cold chamber at -70 °F for a minimum of 16 hours. The chamber temperature shall then be raised to

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-65°F. The QUADCON doors will be opened and closed. Any malfunction shall be recorded and reported. The QUADCON shall then be visually examined both internally and externally for material degradation. There shall be no damage to seals or other components and all hardware shall operate as specified during and after completion of this test. Failure to operate and maintain structural integrity shall constitute unsuccessfully meeting the cold weather environment requirement and failure of this test event.

a. Ice Resistance. To determine if the QUADCON is damaged or made unserviceable by ice or freezing rain the test units during cold weather testing shall be flooded with sufficient water to simulate a soaking rain shower. If when the water freezes the QUADCON does not remain fully functional despite the presence of ice the QUADCON shall be determined as having failed the ice test.

4.3.6.4 Temperature shock. The QUADCON shall be subjected to test similiar to MIL-STD-810E, Method 503.3. Upon completion of this test, there shall be no separation, cracks, delamination, or degradation of physical properties. Presence of such deterioration of the QUADCON shall constitute failure of this test event. Superficial cracks in the glazing that will not affect serviceability of the material are acceptable. The Government may require testing to confirm that the physical properties are not affected.

4.3.6.5 Sand and dust. The QUADCON shall be subjected to test similiar to MIL-STD-810E, Method 510.3, Procedures I and II. There shall be no damage to seals or other components and all hardware shall operate as specified during and upon completion of this test. Failure of the QUADCON to maintain structural integrity and ease of operation shall constitute failure of the test.

4.3.6.6 Solar radiation (sunshine). One representative sample of each fastener, panel, hinge, gasket, seal, and corner fitting shall be subjected to test similiar to MIL-STD-810E, Method 505.3, Procedure I. Upon completion of this test, the samples shall be visually examined and any evidence of degradation of physical properties shall constitute failure of this test.

4.3.6.7 Solar load. The QUADCON shall be subjected to a simulated solar load sufficient to raise the outer skin temperature to a minimum of 160 °F uniformly over the fixed roof. The uniform solar load temperature should be gradually attained within 4 hours and shall be maintained for an additional 4 hours. As a minimum, one thermocouple per 10 square feet shall be uniformly distributed on the entire area of the roof. All of the thermocouples should read 160 °F + 12°F throughout the 4-hour period that the solar load shall be maintained. Upon completion of this test, the roof panels shall be examined and any evidence of delamination or deformation shall constitute failure of this test.

4.3.6.8 Salt fog. One representative sample of each fastener, seal, panel, hinge, gasket, and corner fitting which will be exposed to the atmosphere in the operation and storage modes shall be subjected to tests similiar to those described in MIL-STD-810E, Method 509.3,

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except that the salt solution shall have a concentration of 10 percent and the exposure period shall be 96 hours. Upon completion of this test, the test items shall show no evidence of delamination, cracking, corrosion, or deterioration. The presence of such shall constitute failure of this test event.

4.3.6.9 Wind. A single QUADCON at Tare weight shall be subjected to wind speeds of up to 65 mph and gusts of up to 120 mph lasting two minutes. The wind test shall last for a period of 60 minutes during which gusts shall be induced every 10 minutes. Any delamination, permanent deformation, or evidence of structural weakness shall constitute failure of this test event.

4.3.7 Fire retardancy. The QUADCON shall be tested IAW ASTM E 84 to show that the QUADCON material has a class A fire rating. The QUADCON shall be tested IAW ASTM E 162 to show that the QUADCON material has a flame spread index of 25 or less. The QUADCON shall be tested IAW ASTM ED 662 to show that the QUADCON material has a specific optical density of 100 or less. Failure to meet test success measurements shall constitute failure of this test event.

4.3.8 Weight. The tare weight of each QUADCON shall be taken. The requirements of paragraph 3.5.1.3 shall be satisfied. A tare weight exceeding 1800 lbs shall constitute failure of this test event.

4.3.9 Dimensional. The length, width, height, and diagonals shall be measured and recorded for each QUADCON. During first article testing, the length, width, height, and diagonals shall be measured and recorded for the four QUADCONs when coupled together to form a 1CX container. Successful CSC certification to meet ISO standards shall constitute successfully passing the dimensional requirements.

4.3.10 Interoperability

4.3.10.1 Racks. To verify interoperability with racks a set of Marine Corps QUADCON racks (KECO Model # 138K0060 and racks provided IAW MARCORSYSCOM-PD-97-006, dated 7 May 1998, attached) complete with inserts shall be installed in a QUADCON to determine suitability of fit. Any modification to the racks or the QUADCON, bending of material, or improper fit during and after installation shall constitute failure of the test.

4.3.10.2 NBC Clothing. To verify compatibility with NBC clothing the manufacturer shall require a minimum of three persons to don Mission-Oriented Protective Posture (MOPP IV) NBC gear. These people will open and close the doors as well as install and remove the racks. A government representative observing the test shall determine if the hardware on the QUADCON is easily manipulated by personnel in MOPP IV. Such observations will determine the degree of ease or difficulty and therefore whether the QUADCON passes or fails the test.

4.3.10.3 Cold Weather Clothing. To verify compatibility with cold weather clothing the manufacturer shall require a minimum of three

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persons to don extreme cold weather clothing. These people will open and close the doors as well as install and remove the racks. A government representative observing the test shall determine if the hardware on the QUADCON is easily manipulated by personnel while wearing cold weather gear. Such observations will determine the degree of ease or difficulty and therefore whether the QUADCON passes or fails the test.

4.3.10.4 Interchangeability . Interchangeability is a function of configuration control and quality control during production. The configuration of the QUADCON shall remain the same once the product drawings are approved by the CFR certification authority. Any changes to the design/configuration of the QUADCON by the manufacturer shall occur only with Government consent. Interchangeability shall be verified by Government review of the manufacturer's quality assurance plan and random measurements of parts and components to determine that they are within acceptable tolerances. Any components or parts found to exceed acceptable tolerances shall constitute failure of the FAT.

4.3.11 Safety . The QUADCON shall be inspected to determine that there are no safety hazards inherent in the design or production which pose a safety hazard to personnel. Any sharp edges, sharp corners that when rounded do not hinder the functionality of the container, or parts that entrap fingers or could potentially pinch extremities shall constitute failure of this test.

4.3.12 Workmanship . Workmanship shall be verified during FAT by careful inspection of the specimen containers for cracks, gaps in jointed or welded seams, integrity of materials, cleanliness of materials, and absence of material defects. Castings shall be inspected for warps, cracks, or defects that would lead to failure. Seals shall be inspected for proper fit, continuous contact with mating surfaces, and general overall integrity. The finish shall be inspected to ensure complete coverage by a primer coat and topcoat of protective paint and proper curing of both. Failure of the QUADCON regarding workmanship shall be determined by Government observers during FAT and will depend upon the total number of defects and type of defects per QUADCON unit.

4.3.13 Identification and Marking . The QUADCONs selected for FAT will be inspected to verify that there are in place identification and marking labels complying with ISO and CFR 49 standards/regulations. Failure to comply with ISO standards and CFR 49 regulations shall constitute failure of the FAT.

4.4 Quality Assurance . Quality assurance inspections shall include the examinations described in paragraph 4.4 .1. The quality assurance provisions set forth in this PD shall become a part of the contractor's overall quality assurance program . The absence of any quality assurance requirements in this PD shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does

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not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.4.1 Quality Assurance Inspections . Each shipping lot of QUADCONs fabricated by the contractor shall be subjected to the tests specified in Table III using ANSI/ASQC Z1.4. Failure of any test shall be cause for the sample unit to be rejected. Rejected units may be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the Government.

| Table III, Tests | | | |
|--|--------------|---------------------|-------------------------|
| PERFORMANCE REQUIREMENT | CFR 49 Tests | First Article Tests | Quality Assurance Tests |
| Conformation to ANSI/ISO standards and meets CFR 49 certification requirements | X | X | |
| Mission Capability | | X | |
| Weight | X | X | X |
| Maximum Gross Weight | X | X | |
| Dimensions | X | X | X |
| QUADCON Configuration | X | X | |
| Unused Service Life | | X | |
| In-Use Service Life | | X | |
| Reliability | | X | |
| Maintainability (Organizational Maintenance) | | X | |
| Maintainability (Intermediate Maintenance) | | X | |
| Waterproofness | X | X | X |
| Temperature-Humidity | | X | |
| Temperature shock | | X | |
| Ice | | X | |
| Wind | | X | |
| Roof Load | X | X | |
| Sand and Dust | | X | |
| Ultraviolet radiation | | X | |
| Solar load | | X | |
| Salt fog | | X | |
| Corrosion | | X | |
| Interoperability btwn QUADCONs | X | X | |
| Interoperability with MHE | X | X | |
| Interoperability with Transport Equipment | X | X | |
| Interoperability with Cold Weather Clothing | | X | |
| Interoperability with NBC Clothing | | X | |
| Interoperability with Racks | | X | |
| Transportability - U.S. highways | | X | |
| Transportability - Intermodal | | X | |
| Transportability - Railroad | | X | |

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| Table III, Tests | | | |
|---|--------------|---------------------|-------------------------|
| PERFORMANCE REQUIREMENT | CFR 49 Tests | First Article Tests | Quality Assurance Tests |
| Transportability - Air | | X | |
| Transportability - External Helicopter Lift | | X | |
| Transportability - Seabased shipping | | X | |
| Understructure | | X | |
| Doors | | X | |
| Corner Fittings | | X | |
| Tolerances for perpendicular angles | | X | |
| Identification and Markings | | X | X |
| Workmanship | | X | X |
| Interchangeability | | X | |
| Safety | | X | X |
| Fire retardancy | | X | |
| Drop shock | | X | |

4.5 Test reports . The results of all testing shall be reported and written in compliance with paragraph 3.7.2 of the SOW (see para. 2.2.1, Other Publications of this PD) fully describing and illustrating the test procedures and test results.

5.0 PACKAGING

5.1 Packaging Examination . The below matrix depicts the nature of inspection procedures the government shall employ to ensure compliance with packaging and marking specifications.

| Table IV - <u>Packaging Examination</u> | |
|---|--|
| <u>Inspect</u> | <u>Defect</u> |
| Marking (exterior and interior) | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |
| Materials | Any component missing, damaged, or not as specified |
| Workmanship | Inadequate application of labels, unreadable numbers or letters on the label(s), serial numbers out of sequence. |

6.0 NOTES

6.1 Intended use . The QUADCON is intended to serve Fleet Marine Force Units to store and transport small organic equipment and consumable supplies (organizational clothing, individual equipment, administrative supplies, and repair parts) during deployment and while employed.

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6.2 Recycled material . It is encouraged that recycled materials be used when practical for the production of delivery items, as long as the end product meets the requirements of this document.